

CLAIMS

1. A lightning protection apparatus for a radome attached to an airframe comprising;

a source of electrically conducting fluid;

a delivery means for delivering the conducting fluid to the surface of the radome when installed prior to a lightning strike;

a control means for controlling the delivery means having

one or more electrostatic field sensors for detecting a change in surrounding atmospheric conditions indicative of a high probability lightning strike and

means for initiating delivery of the conducting fluid on detection of such a change in atmospheric conditions comprising a threshold detector for detecting when an electrostatic field amplitude detected by the one or more electrostatic field sensors exceeds a predetermined threshold level, and a switch for activating the delivery means when the predetermined threshold level is exceeded; and

means for directing the conducting fluid across the radome surface when installed towards the airframe thereby providing a channel for conducting any current induced by a lightning strike to the airframe for dissipation without damage to the radome.

2. A lightning protection apparatus for a radome as claimed in claim 1 wherein a plurality of electrostatic field sensors are provided in a circumferential spatial arrangement about the longitudinal axis of the radome and are polarity sensitive; the means for initiating the delivery system comprises a logic circuit configured to recognise a condition where at least one electrostatic sensor detects a field amplitude which exceeds the predetermined threshold level and the polarity of the

field detected by each of the plurality of electrostatic field sensors is not the same, and the switch is activated by the logic circuit only when both these conditions are met.

3. A lightning protection apparatus for a radome as claimed in claim 1 or claim 2 wherein the predetermined threshold level is about 1000 volts per metre.

4. A lightning protection apparatus for a radome as claimed in any preceding claim wherein the means for directing the conducting fluid across the outer surface of the radome comprises grooves on the surface of the radome.

5. A lightning protection apparatus for a radome as claimed in any preceding claim further comprising means for deactivating the conductive channel when the surrounding atmospheric conditions are no longer indicative of a high probability lightning strike.

6. A lightning protection apparatus for a radome as claimed in claim 5 wherein the means for deactivating the conductive channel comprises a source of clean carrier liquid and means for flushing the clean carrier liquid through the delivery system and over the conductive channel thereby removing the conductive channel.

7. A lightning protection apparatus for a radome as claimed in any preceding claim wherein the delivery system comprises two or more dielectric capillary tubes which vent close to the tip of the radome and a pump associated with a reservoir of the conducting fluid.

8. A lightning protection apparatus for a radome as claimed in any preceding claim wherein the delivery system comprises a pneumatic or hydraulic system in which all control lines are dielectric and the pneumatic or hydraulic fluid used is not electrically conducting.

13. A method for conducting lightning across the surface of a non-conducting article substantially as described herein and with reference to the Figures.

14. A method for conducting lightning across the surface of a non-conducting article comprising;

providing a source of electrically conducting fluid;

delivering the conducting fluid to the surface of the article prior to a lightning strike;
and

directing the conducting fluid across the outer surface of the article thereby providing a conductive channel for the passage of electrical current resulting from a lightning strike and dissipating said current through a conductive medium.

15. A lightning protection apparatus substantially as described herein and with reference to the Figures.

16. A method for conducting lightning across the surface of a non-conducting article substantially as described herein and with reference to the Figures.